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09/692,654	10/18/2000	Stephen Wu	39389/CAG/B600	7167

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EXAMINER	
MILORD, MARCEAU	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/692,654	Applicant(s) WU ET AL.	
	Examiner Marceau Milord	Art Unit 2682	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 October 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-68* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-61* is/are rejected.

7)☐ Claim(s) *62-68* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 October 2000* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-7, 15-20, 28-34, 47-49, 54-59, 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hessel et al (US Patent No 6343207 B1) in view of Allen et al (US Patent No 4648060).

Regarding claim 1, Hessel et al discloses a circuit (figs 8-9), comprising: first and second digitally tunable filters (169 of fig. 8, 172 I and 172 Q of fig. 8; col. 10, line 60- col. 11, line 12; col. 2, lines 3-53); and control logic (174 I or 174 Q of fig. 8, 180 I or 180 Q of fig. 9) to digitally tune the first and second filters as a function of a first parameter of a first signal output from the first filter and a second parameter of a second signal output from the second filter (col. 11, lines 8-49; col. 6, lines 6-35;col. 9, line 8-31; col. 10,lines 20-50; col. 23, lines 1-25).

However, Hessel et al does not specifically disclose the feature of a calibrated circuit.

On the other hand, Allen et al, from the same field of endeavor, discloses a signal synthesizer system that allows a wide variety of sources for test and evaluation. Furthermore, Allen shows in figure 3, a technique where two channels can be switched onto the calibrator circuit, which is able to measure the amplitudes of either channel or relative phase between the two. Measurements taken are interpreted by the controller, which in turn adjusts the level control

or the fractional –N phase to correct for any error (col. 5, lines 17- 47; col. 7, lines 3-59;col. 3, lines 39-66). The phase calibration system has a unique contribution to the signal synthesizer system such that with two channels in one instrument and the addition of the phase calibrator, very precise phase accuracy can be maintained. This phase calibration technique allows theoretically zero phase error for equal level sines, and utilizes a unique attenuation switching technique to characterize and correct error for phase errors (col. 9, line 35- col. 10, line 43). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Allen to the system of Hessel in order to provide a phase calibration system which results in being a wideband, variable, variable phase two channels synthesized source with good phase accuracy over its entire frequency range.

Regarding claim 2, Hessel et al as modified discloses a circuit (figs 8-9), wherein the first and second filters each comprises a polyphase filter (col. 11, lines 1-49; col. 23, lines 1-25; col. 25, line 59- col. 26, line 21).

Regarding claim 3, Hessel et al as modified discloses a circuit (figs 8-9), wherein the first and second filters each comprises a notch filter (col. 10, line 60- col. 11, line 35; col. 21, line 52- col. 22, line 29).

Regarding claim 4, Hessel et al as modified discloses a circuit (figs 8-9), comprising a first signal strength indicator to determine the first parameter and a second signal strength indicator to determine the second parameter (col. 9, lines 7-31; col. 10, line 20-col. 11, line 12; col. 15, line 43- col. 16, line 29).

Regarding claim 5, Hessel et al as modified discloses a circuit (figs 8-9), wherein the first parameter comprises a first signal suppression and the second parameter comprises a second signal suppression (col. 7, lines 18-49; col. 15, line 43- col. 16, line 29).

Regarding claim 6, Hessel et al as modified discloses a circuit (figs 8-9), comprising a comparator to compare the first signal suppression to the second signal suppression, the control logic (174 I or 174 Q of fig. 8, 180 I or 180 Q of fig. 9) digitally tuning the first filter if the first signal suppression is lower than the second signal suppression and digitally tuning the second filter if the second signal suppression is lower than the first signal suppression (col. 15, lines 5-65; col. 16, lines 1-29; col 17, lines 1-35).

Regarding claim 7, Hessel et al as modified discloses a circuit (figs 8-9), wherein the control logic digitally tunes each of the first and second filters by providing a first digital word to the first filter and a second digital word to the second filter (col. 21, line 52- col. 22, line 29; col. 23, lines 1-25).

Regarding claim 15, Hessel et al discloses a circuit (figs 8-9), comprising:
first and second digitally tunable filters (169 of fig. 8, 172 I and 172 Q of fig. 8; col. 10, line 60- col. 11, line 12; col. 2, lines 3-53); and tuning means for digitally tuning the first and second filters as a function of a first parameter of a first signal output from the first filter and a second parameter of a second signal output from the second filter ((col. 11, lines 8-49; col. 6, lines 6-35;col. 9, line 8-31; col. 10,lines 20-50; col. 23, lines 1-25).

However, Hessel et al does not specifically disclose the feature of a calibrated circuit.

On the other hand, Allen et al, from the same field of endeavor, discloses a signal synthesizer system that allows a wide variety of sources for test and evaluation. Furthermore,

Allen shows in figure 3, a technique where two channels can be switched onto the calibrator circuit, which is able to measure the amplitudes of either channel or relative phase between the two. Measurements taken are interpreted by the controller, which in turn adjusts the level control or the fractional –N phase to correct for any error (col. 5, lines 17- 47; col. 7, lines 3-59;col. 3, lines 39-66). The phase calibration system has a unique contribution to the signal synthesizer system such that with two channels in one instrument and the addition of the phase calibrator, very precise phase accuracy can be maintained. This phase calibration technique allows theoretically zero phase error for equal level sines, and utilizes a unique attenuation switching technique to characterize and correct error for phase errors (col. 9, line 35- col. 10, line 43). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Allen to the system of Hessel in order to provide a phase calibration system which results in being a wideband, variable, variable phase two channels synthesized source with good phase accuracy over its entire frequency range.

Regarding claim 16, Hessel et al as modified discloses a circuit (figs 8-9), wherein the first and second filters each comprises a polyphase filter (col. 11, lines 1-49; col. 23, lines 1-25; col. 25, line 59- col. 26, line 21).

Regarding claim 17, Hessel et al as modified discloses a circuit (figs 8-9), wherein the first and second filters each comprises a notch filter (col. 10, line 60- col. 11, line 35; col. 21, line 52- col. 22, line 29).

Regarding claim 18, Hessel et al as modified discloses a circuit (figs 8-9), wherein the first parameter comprises a first signal suppression and the second parameter comprises a second signal suppression, the tuning means further comprising means for determining the first signal

strength of the first signal output from the first filter and means for determining the second signal strength of the second signal output from the second filter.

Regarding claim 19, Hessel et al as modified discloses a circuit (figs 8-9), wherein the tuning means further comprises means for comparing the first signal suppression with the second signal suppression, the tuning means digitally tuning the first filter if the first signal suppression is lower than the second signal suppression and digitally tuning the second filter if the second signal suppression is lower than the first signal suppression (col. 15, lines 5-65; col. 16, lines 1-29; col 17, lines 1-35).

Regarding claim 20, Hessel et al as modified discloses a circuit (figs 8-9wherein the tuning means digitally tunes each of the first and second filters by providing a first digital word to the first filter and a second digital word to the second filter (col. 21, line 52- col. 22, line 29; col. 23, lines 1-25).

Regarding claim 28, Hessel et al discloses a transceiver (figs. 1-2 and fig. 7; col. 6, lines 1-30), comprising: a circuit (figs 7-9), having first and second digitally tunable filters (169 of fig. 8, 172 I and 172 Q of fig. 8; col. 10, line 60- col. 11, line 12; col. 2, lines 3-53); and control logic (174 I or 174 Q of fig. 8, 180 I or 180 Q of fig. 9) having a tuning output to digitally tune the first and second filters as a function of a first parameter of a first signal output from the first filter and a second parameter of a second signal output from the second filter; and a digitally tunable transceiver filter tuned by the tuning output of the control logic (col. 11, lines 8-49; col. 6, lines 6-35;col. 9, line 8-31; col. 10,lines 20-50; col. 23, lines 1-25.

However, Hessel et al does not specifically disclose the feature of a calibrated circuit.

On the other hand, Allen et al, from the same field of endeavor, discloses a signal synthesizer system that allows.a wide variety of sources for test and evaluation. Furthermore, Allen shows in figure 3, a technique where two channels can be switched onto the calibrator circuit, which is able to measure the amplitudes of either channel or relative phase between the two. Measurements taken are interpreted by the controller, which in turn adjusts the level control or the fractional –N phase to correct for any error (col. 5, lines 17- 47; col. 7, lines 3-59;col. 3, lines 39-66). The phase calibration system has a unique contribution to the signal synthesizer system such that with two channels in one instrument and the addition of the phase calibrator, very precise phase accuracy can be maintained. This phase calibration technique allows theoretically zero phase error for equal level sines, and utilizes a unique attenuation switching technique to characterize and correct error for phase errors (col. 9, line 35- col. 10, line 43). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Allen to the system of Hessel in order to provide a phase calibration system which results in being a wideband, variable, variable phase two channels synthesized source with good phase accuracy over its entire frequency range.

Regarding claim 29, Hessel et al as modified discloses a transceiver (figs. 1-2 and fig. 7; col. 6, lines 1-30), comprising: a circuit (figs 7-9), wherein the first and second filters each comprise a polyphase filter (col. 11, lines 1-49; col. 23, lines 1-25; col. 25, line 59- col. 26, line 21).

Regarding claim 30, Hessel et al as modified discloses a transceiver (figs. 1-2 and fig. 7; col. 6, lines 1-30), comprising: a circuit (figs 7-9), wherein the first and second filters each comprise a notch filter (col. 10, line 60- col. 11, line 35; col. 21, line 52- col. 22, line 29).

Regarding claim 31, Hessel et al as modified discloses a transceiver (figs. 1-2; col. 6, lines 1-30), comprising: a circuit (figs 7-9), comprising a first signal strength indicator to determine the first parameter and a second signal strength indicator to determine the second parameter (col. 9, lines 7-31; col. 10, line 20-col. 11, line 12; col. 15, line 43- col. 16, line 29).

Regarding claim 32, Hessel et al as modified discloses a transceiver (figs. 1-2; col. 6, lines 1-30), comprising: a circuit (figs 7-9), wherein the first parameter comprises a first signal suppression and the second parameter comprises a second signal suppression (col. 7, lines 18-49; col. 15, line 43- col. 16, line 29).

Regarding claim 33, Hessel et al as modified discloses a transceiver (figs. 1-2 and fig. 7; col. 6, lines 1-30), comprising: a circuit (figs 7-9), comprising a comparator to compare the first signal suppression to the second signal suppression, the control logic (174 I or 174 Q of fig. 8, 180 I or 180 Q of fig. 9) digitally tuning the first filter if the first signal suppression is lower than the second signal suppression and digitally tuning the second filter if the second signal suppression is lower than the first signal suppression (col. 15, lines 5-65; col. 16, lines 1-29; col 17, lines 1-35).

Regarding claim 34, Hessel et al as modified discloses a transceiver (figs. 1-2 and fig. 7; col. 6, lines 1-30), comprising: a circuit (figs 7-9), wherein the control logic (174 I or 174 Q of fig. 8, 180 I or 180 Q of fig. 9) digitally tunes each of the first and second filters by providing a first digital word to the first filter and a second digital word to the second filter (col. 21, line 52-col. 22, line 29; col. 23, lines 1-25).

Regarding claim 47, Hessel et al discloses a circuit (figs 8-9), comprising: first and second digitally tunable filters each having a tuning input (169 of fig. 8, 172 I and 172 Q of fig.

8; col. 10, line 60- col. 11, line 12; col. 2, lines 3-53); a first signal strength indicator having an input coupled to the first filter, and an output; a second signal strength indicator having an input coupled to the second filter, and an output; a comparator having an input coupled to the output of the first and second signal strength indicators, and an output; and control logic (174 I or 174 Q of fig. 8, 180 I or 180 Q of fig. 9) having an input coupled to the output of the comparator, and a first tuning output coupled to the tuning input of the first filter and a second tuning output coupled to the tuning input of the second filter (col. 11, lines 8-49; col. 6, lines 6-35;col. 9, line 8-31; col. 10,lines 20-50; col. 23, lines 1-25).

However, Hessel et al does not specifically disclose the feature of a calibrated circuit.

On the other hand, Allen et al, from the same field of endeavor, discloses a signal synthesizer system that allows a wide variety of sources for test and evaluation. Furthermore, Allen shows in figure 3, a technique where two channels can be switched onto the calibrator circuit, which is able to measure the amplitudes of either channel or relative phase between the two. Measurements taken are interpreted by the controller, which in turn adjusts the level control or the fractional –N phase to correct for any error (col. 5, lines 17- 47; col. 7, lines 3-59;col. 3, lines 39-66). The phase calibration system has a unique contribution to the signal synthesizer system such that with two channels in one instrument and the addition of the phase calibrator, very precise phase accuracy can be maintained. This phase calibration technique allows theoretically zero phase error for equal level sines, and utilizes a unique attenuation switching technique to characterize and correct error for phase errors (col. 9, line 35- col. 10, line 43). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Allen to the system of Hessel in order to provide a phase

calibration system which results in being a wideband, variable, variable phase two channels synthesized source with good phase accuracy over its entire frequency range.

Regarding claim 48, Hessel et al as modified discloses a circuit (figs 8-9), wherein the first and second filters each comprises a polyphase filter (col. 11, lines 1-49; col. 23, lines 1-25; col. 25, line 59- col. 26, line 21).

Regarding claim 49, Hessel et al as modified discloses a circuit (figs 8-9), wherein the first and second filters each comprises a notch filter (col. 10, line 60- col. 11, line 35; col. 21, line 52- col. 22, line 29).

Regarding claim 54, Hessel et al discloses a method (figs 8-9) comprising: providing a reference signal to first and second digitally tunable filters (169 of fig. 8, 172 I and 172 Q of fig. 8; col. 10, line 60- col. 11, line 12; col. 2, lines 3-53); and digitally tuning the first and second filters as a function of a first parameter of the filtered reference signal output from the first filter and a second parameter of the filtered reference signal output from the second filter (col. 11, lines 8-49; col. 6, lines 6-35;col. 9, line 8-31; col. 10,lines 20-50; col. 23, lines 1-25).

However, Hessel et al does not specifically disclose that the system is calibrated.

On the other hand, Allen et al, from the same field of endeavor, discloses a signal synthesizer system that allows a wide variety of sources for test and evaluation. Furthermore, Allen shows in figure 3, a technique where two channels can be switched onto the calibrator circuit, which is able to measure the amplitudes of either channel or relative phase between the two. Measurements taken are interpreted by the controller, which in turn adjusts the level control or the fractional –N phase to correct for any error (col. 5, lines 17- 47; col. 7, lines 3-59;col. 3, lines 39-66). The phase calibration system has a unique contribution to the signal synthesizer

system such that with two channels in one instrument and the addition of the phase calibrator, very precise phase accuracy can be maintained. This phase calibration technique allows theoretically zero phase error for equal level sines, and utilizes a unique attenuation switching technique to characterize and correct error for phase errors (col. 9, line 35- col. 10, line 43). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Allen to the system of Hessel in order to provide a phase calibration system which results in being a wideband, variable, variable phase two channels synthesized source with good phase accuracy over its entire frequency range.

Regarding claim 55, Hessel et al as modified discloses a method (figs 8-9) wherein the first and second filters each comprises a polyphase filter (col. 11, lines 1-49; col. 23, lines 1-25; col. 25, line 59- col. 26, line 21).

Regarding claim 56, Hessel et al as modified discloses a method (figs 8-9) wherein the first and second filters each comprises a notch filter (col. 10, line 60- col. 11, line 35; col. 21, line 52- col. 22, line 29).

Regarding claim 57, Hessel et al as modified discloses a method (figs 8-9) wherein the first parameter comprises a first signal suppression and the second parameter comprises a second signal suppression (col. 7, lines 18-49; col. 15, line 43- col. 16, line 29).

Regarding claim 58, Hessel et al as modified discloses a method (figs 8-9) comprising comparing the first signal suppression to the second signal suppression, wherein tuning of the first and second filters comprises digitally tuning the first filter if the first signal suppression is lower than the second signal suppression and digitally tuning the second filter if the second

signal suppression is lower than the first signal suppression (col. 15, lines 5-65; col. 16, lines 1-29; col 17, lines 1-35).

Regarding claim 59, Hessel et al as modified discloses a method (figs 8-9) wherein the tuning of the first and second filters further comprises providing a first digital word to the first filter and a second digital word to the second filter (col. 21, line 52- col. 22, line 29; col. 23, lines 1-25).

Regarding claim 61, Hessel et al as modified discloses a method (figs 8-9) wherein the first parameter comprises a first signal suppression and the second parameter comprises a second signal suppression (col. 7, lines 18-49; col. 15, line 43- col. 16, line 29).

Claim Rejections - 35 USC § 103

3. Claims 8-14, 21-27, 35-46, 50-53, 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hessel et al (US Patent No 6343207 B1) in view of Allen et al (US Patent No 4648060) as applied to claims 1, 15, 28, 47, 54 above, and further in view of Brehmer et al (US Patent No 5283484).

Regarding claims 8-14, Hessel and Allen disclose everything claimed as explained above except the feature of a first resistor and a first tunable capacitor; and a second resistor and a second tunable capacitor, the control logic digitally tuning the first and second capacitors.

However, Brehmer et al discloses in figure 1, a voltage limiter that includes a resistor receiving an input signal on a first terminal and providing an output signal on a second terminal, and a capacitor connected between the second terminal of the resistor and ground. Furthermore, Brehmer shows in figure 5, a capacitor 83 which has a first terminal connected to the second terminal of resistor 81, and a second terminal connected to the second terminal of resistor 82;

and transistor 85 has a source connected to the drain of transistor 84, a gate for receiving voltage PBIAS, and a drain connected to the second terminal of resistor 81. In addition, capacitor 105 has a first terminal connected to the second terminal of transmission gate 101, and a second terminal; capacitor 106 also has a first terminal connected to the second terminal of transmission gate 102, and a second terminal (figs. 1- 3, fig. 5; col. 1, line 58- col. 3, line 26; col. 2, line 51- col. 4, line 32; col. 5, line 24- col. 6, line 59). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Brehmer to the modified system of Allen and Hessel in order to vary the center frequency of the filter by switching in or out the capacitors based on a four-bit binary code.

Claims 21- 27 contain similar limitations addressed in claims 8-14, and therefore are rejected under a similar rationale.

Regarding claims 35-46, Hessel and Allen disclose everything claimed as explained above except the feature of a first filter comprises a first resistor and a first tunable capacitor, and a second resistor and a second tunable capacitor, the control logic digitally tuning the first and second capacitors; the first capacitor comprises a first tunable capacitor array and the second capacitor comprises a second tunable capacitor array; and the first and second tunable capacitor arrays each comprises a plurality of capacitors coupled in parallel, and a plurality of switches each being coupled in series to a different one of their its respective capacitors.

However, Brehmer et al discloses in figure 1, a voltage limiter that includes a resistor receiving an input signal on a first terminal and providing an output signal on a second terminal, and a capacitor connected between the second terminal of the resistor and ground. Furthermore, Brehmer shows in figure 5, a capacitor 83 which has a first terminal connected to the second

terminal of resistor 81, and a second terminal connected to the second terminal of resistor 82; and transistor 85 has a source connected to the drain of transistor 84, a gate for receiving voltage PBIAS, and a drain connected to the second terminal of resistor 81. In addition, capacitor 105 has a first terminal connected to the second terminal of transmission gate 101, and a second terminal; capacitor 106 also has a first terminal connected to the second terminal of transmission gate 102, and a second terminal (figs. 1- 3, fig. 5; col. 1, line 58- col. 3, line 26; col. 2, line 51- col. 4, line 32; col. 5, line 24- col. 6, line 59). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Brehmer to the modified system of Allen and Hessel in order to vary the center frequency of the filter by switching in or out the capacitors based on a four-bit binary code.

Claims 50-53, 60 contain similar limitations addressed in claims 35-46, and therefore are rejected under a similar rationale.

Allowable Subject Matter

4. Claims 62-68 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Yu-Hong US Patent No 6118984 discloses a dual conversion radio frequency transceiver.

Arevato US Patent No 6147576 discloses a method for designing filters.

Ragan US Patent No 5031233 discloses a single chip radio receiver, which has less external components than do previous similar receivers.

Marik et al US Patent No 4903329 discloses a clamping circuit for a PLL tuning system.

Osburn et al US Patent No 5428829 discloses a method for tuning and aligning electronically tuned FM broadcast receiver.

Brehmer et al US Patent No 5283484 discloses a voltage limiter that includes a resistor receiving an input signal on a first terminal and providing an output signal on a second terminal.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marceau Milord whose telephone number is 703-306-3023. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian C. Chin can be reached on 703-308-6739. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

MARCEAU MILORD

Marceau Milord
Examiner
Art Unit 2682